US DEPARTMENT OF AGRICULTURE
FOREST SERVICE

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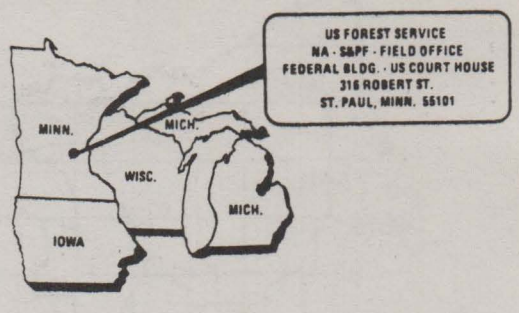
Northeastern Area
State & Private Forestry
DIVISION OF FOREST PEST CONTROL



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JACK-PINE BUDWORM EARLY INSTAR LARVAL SURVEY ON THE NICOLET N.F.

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INTRODUCTION

The jack-pine budworm is a perenial pest of jack and red pine in the Lake States. The damage from defoliation results in growth reduction, top-kill, or tree mortality, depending on the severity of defoliation.

Predictions of budworm outbreaks and defoliation have been inaccurate To improve the predictions, annual evaluation surveys were inaugurated to determine the following:

1. To determine the degree of budworm population fluctuations during pre-outbreak periods.

2. To determine the effect of previous pine defoliation on the budworm populations.

3. To determine how much defoliation occurs from a given larval population.

This report covers the results of early larval collections made in June, 1969, and compares the populations with egg survey results from the previous fall.

METHODS

The detailed sampling plans are described in the original evaluation plan (Millers, 1968). In general, it follows the techniques described by Foltz et al., 1968. Briefly, 4 branches are sampled from each of 10 trees (2 from mid-crown and 2 from lower crown) in a cluster at preselected locations. During egg survey in fall, 36 inch long branches were examined. For larval surveys, 18 inch long branches are sampled. Summer Students, FPC, and a crew at the Toumey Nursery, Watersmeet, Michigan, were responsible for branch examination. The results are expressed as number of budworms (or eggs) per 100 shoots (current growth tips) per plot. More than 40 budworms per 100 tips can be expected tocause heavy defoliation.

RESULTS

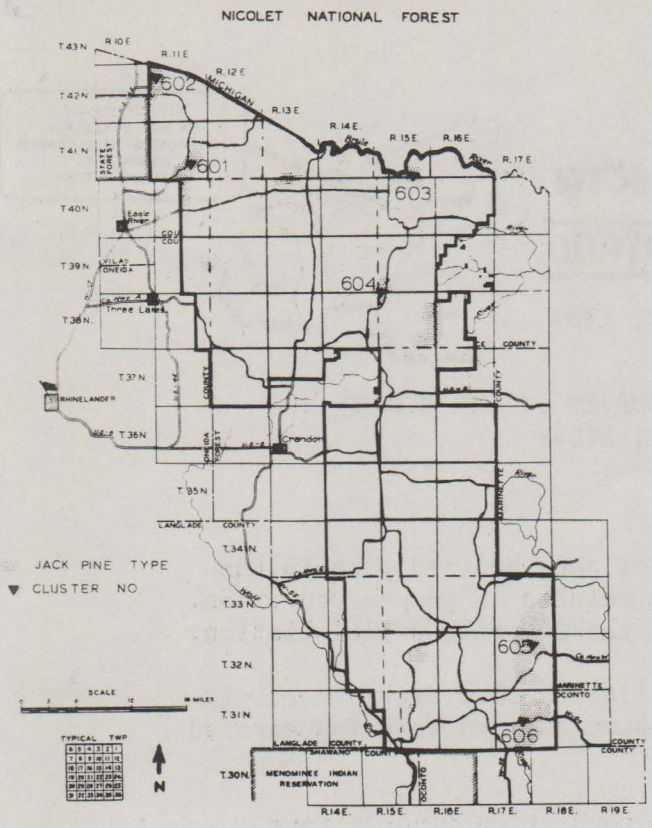

Table 1 shows the results of the early larval survey and compares them with the results of the previous fall's egg survey. The adjoining map shows locations of the sample clusters.

The expected high budworm populations on the Lakewood Ranger District is confirmed. Severe defoliation is expected in vicinity of Cluster 606. Moderate defoliation is likely in the Thunder Mountain area (Cluster 605), where moderate to severe defoliation occurred in 1968. The Lac Vieux Desert population (Cluster 602) has declined, but the additional defoliation this year may cause top-kill of trees that were heavily defoliated in 1968.

TABLE I. JACK-PINE BUDWORM POPULATIONS ON THE NICOLET NATIONAL FOREST

CLUSTER No.	FALL, 1968 Eggs/100 tips	SPRING, 1969 Larvae/100 tips
601	8	7.20
603	5	2.01
604	6	2.79
602	307	8.84
605	452	28.93
606	238	126.28

REFERENCES

FOLTZ, J. L., F. B. Knight, D. C. Allen, A. J. Mattson, Jr. 1968. A technique for sampling populations of the jack-pine budworm. Forest Service 14(3): 277-281

MILLERS, I. 1968. Evaluation plan for jack-pine budworm larval populations on National Forests in the Lake States. USDA, Forest Service, NA S&PF, St. Paul Field Office. 5230. 6 pp.